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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/971,903

10/04/2001

Raghu Challa

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06/04/2004

Qualcomm Incorporated
Patents Department
5775 Morehouse Drive
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EXAMINER

BAYARD, EMMANUEL

ART UNIT

PAPER NUMBER

2631

8

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/971,903

Applicant(s)

CHALLA ET AL.

Examiner

Emmanuel Bayard

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 18-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 18-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This is in response to amendment filed 3/15/04 in which claims 1-16, 18-41 are pending. The applicant's amendments have been fully considered therefore but they are moot based on the new ground of rejection.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1, 4-14 and 38-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Ogawa et al Pub No: U.S. No 2002/0024992 A1.

As per claims 1, and 38-39 Ogawa discloses method of acquiring one or more pilots in a wireless communication system, comprising: searching for peaks in a received signal over a designated code space to provide a set of one or more candidate peaks (see col.2, paragraph [0022] and col.3, paragraph [0038]); processing each candidate peak to acquire the candidate peak (see col.2-col.3); and performing the searching and processing a plurality of times such that the searching for a next set of candidate peaks is performed in parallel with the processing for a current set of candidate peaks (see col.3, paragraphs, [0040], [0043], [0046]).

As per claim 4, the method of Ogawa et al inherently includes, wherein the designated code space includes phases for all or a portion of a pseudo-random noise (PN) sequence used to generate a pilot.

As per claims 5, the method of Ogawa et al inherently includes wherein the designated code space is partitioned into a plurality of code segments, and wherein the searching is performed over each code segment (see abstract CDMA or code division and col.1, lines 10-67).

As per claim 6, the method of Ogawa does include wherein the searching includes detecting for peaks over the designated code space to provide a set of detected peaks, and re-evaluating each detected peak to remove noise peaks and provide the one or more candidate peaks (see fig.2 elements 10-1, 10-2).

As per claim 7, the method of Ogawa does include wherein the searching is performed by a searcher and the processing is performed by one or more finger processors (see fig.2 element 11-1, 11-3).

As per claim 8, the method of Ogawa does include wherein the processing for each candidate peak in the current set is performed by a respective finger processor and the processing for all candidate peaks in the current set is performed in parallel (see fig.2).

As per claim 9, the method of Ogawa does include, wherein the searching is performed using a plurality of sets of parameter values for the plurality of times (see col.2, paragraph [0022], 0025]).

As per claim 10, The method of Ogawa et al inherently includes wherein each set of parameter values includes a first value for coherent accumulation of despread samples and a second value for non coherent accumulation of pilot symbols (see col.6, lines 6-19).

As per claim 11, the method of Tran inherently includes, wherein the sets of parameter values having improved pilot detection performance for more likely operating conditions are used first.

As per claims 12-13, the method of Ogawa et al inherently includes, wherein the communication system is a CDMA system (see abstract).

As per claim 14, the method of Ogawa et al inherently includes W-CDMA or TS-CDMA.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-3, 15, 27 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al Pub No: U.S. No 2002/0024992 A1 in view of Yamamoto U.S. Patent No 5,966,402.

As per claims 2-3, Tran discloses all the features of the claimed invention except pipelining the searching and processing for different sets of candidate peaks to shorten acquisition time.

Yamamoto teaches pipelining the searching and processing for different sets of candidate peaks to shorten acquisition time (see col.7, lines 15-20).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Yamamoto into Ogawa so that a result of the partial correlation is deemed to be a pilot

candidate for signal detection in order to improve the quality of the communication as taught by Yamamoto (see col.7, lines 33-38).

As per claim 15, Ogawa discloses method of acquiring one or more pilots in a wireless communication system, comprising: searching for peaks in a received signal over a designated code space to provide a set of one or more candidate peaks (see abstract and fig.1 element 18 and col.8, lines 10-67); processing each candidate peak to acquire the candidate peak (see abstract and fig.1 element 16 and col.3, lines 35-67 and col.4, lines 12-20 and col.5, lines 16-17); and performing the searching and processing a plurality of times such that the searching for a next set of candidate peaks is performed in parallel with the processing for a current set of candidate peaks (see fig.1 elements 1-3 or fingers and col.5, lines).

However Ogawa does not teach terminating the searching and processing upon detection of pilot acquisition.

Yamamoto teaches terminating the searching and processing upon detection of pilot acquisition (see col.7, lines 15-20).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Yamamoto into Ogawa so that a result of the partial correlation is deemed to be a pilot candidate for signal detection in order to improve the quality of the communication as taught by Yamamoto (see col.7, lines 33-38).

As per claims 27 and 33, Ogawa teaches all the features of the claimed invention except terminate pilot acquisition upon detection of successful pilot acquisition.

Yamamoto teaches terminating the searching and processing upon detection of pilot acquisition (see col.7, lines 15-20).

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It would have been obvious to one of ordinary skill in the art to implement the teaching of Yamamoto into Owaga so that a result of the partial correlation is deemed to be a pilot candidate for signal detection in order to improve the quality of the communication as taught by Yamamoto (see col.7, lines 33-38).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

6. Claims 16, 18, 20-24, are rejected under 35 U.S.C. 102(e) as being anticipated by Challa et al et al U.S. Patent NO 6,700,922 B2.

As per claim 16, Challa et al teaches method of acquiring one or more pilots in a wireless communication system, comprising: partitioning a range of possible frequency errors for the pilots into a plurality of frequency bins (see fig.6 and col.6, lines 65-67 and col.7, lines 1-13); correlating is considered as the claimed (evaluating) each of the frequency bins to acquire the one or more pilots (see col.7, lines 1-5), Challa et al inherently teaches terminating the evaluation upon detection of the pilot acquisition.

As per claim 18, Challa et al inherently includes wherein the evaluating each frequency bin includes frequency translating data samples derived from a received signal to an approximate center of the frequency bin, searching for peaks in the received signal, based on the frequency-translated data samples, over a designated code space to provide a set of one or more candidate peaks, and processing each candidate peak to acquire the candidate peak (see col. 1, lines 43-67 and col. 5, lines 29-37 and col. 6, lines 1-5).

As per claim 20 Challa et al does include, wherein the searching for a next frequency bin is performed in parallel (see fig. 5) with the processing for a current frequency bin.

As per claim 21, Challa et al inherently includes wherein the searching includes detecting for peaks over the designated code space to provide a set of detected peaks, and re-evaluating each detected peak to remove noise peaks as to improve the quality of the communication system.

As per claim 22, Challa et al does include wherein the designated code space includes phases for all or a portion of a pseudo-random noise (PN) sequence (see fig. 5 elements 180-186) used to generate a pilot.

As per claim 23, Challa et al does include, wherein the searching is performed by a searcher and the processing for each candidate peak in a particular set is performed by a respective finger processor, and wherein the processing for all candidate peaks in the set are performed in parallel (see fig. 5 element 130 and col. 5, lines 15-67 and col. 6, lines 2-67).

As per claim 24 Challa et al inherently includes wherein the frequency bins overlap.

Claim Rejections - 35 USC § 103

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7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 16, 18-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Challa et al et al U.S. Patent NO 6,700,922 B2 in view of Yamamoto U.S. Patent NO 5,966,402.

As per claim 16, Challa et al teaches method of acquiring one or more pilots in a wireless communication system, comprising: partitioning a range of possible frequency errors for the pilots into a plurality of frequency bins (see fig.6 and col.6, lines 65-67 and col.7, lines 1-13); evaluating each of the frequency bins to acquire the one or more pilots (see col.7, lines 1-5).

However Challa does not teach terminating the evaluating upon detection of pilot acquisition.

Yamamoto teaches terminating the evaluation upon detection of pilot acquisition (see col.7, lines 15-20).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Yamamoto into Challa so that a result of the partial correlation is deemed to be a pilot candidate for signal detection in order to improve the quality of the communication as taught by Yamamoto (see col.7, lines 33-38).

As per claim 18, Challa et al would include wherein the evaluating each frequency bin includes frequency translating data samples derived from a received signal to an approximate center of the frequency bin, searching for peaks in the received signal, based on the frequency-translated data samples, over a designated code space to provide a set of one or more

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candidate peaks, and processing each candidate peak to acquire the candidate peak as to determine the maximum peak levels of each frequency bin.

As per claim 19, Challa does not teach pipelining the searching and processing for different frequency bins to shorten acquisition time.

Yamamoto teaches terminating the evaluation upon detection of pilot acquisition (see col.7, lines 15-20) is functionally equivalent to the claimed shorten the acquisition time.

It would have been obvious to one of ordinary skill in the art to implement the teaching of Yamamoto into Challa so that a result of the partial correlation is deemed to be a pilot candidate for signal detection in order to improve the quality of the communication as taught by Yamamoto (see col.7, lines 33-38).

As per claim 20 Challa et al does include, wherein the searching for a next frequency bin is performed in parallel (see fig.5) with the processing for a current frequency bin.

As per claim 21, Challa et al inherently includes wherein the searching includes detecting for peaks over the designated code space to provide a set of detected peaks, and re-evaluating each detected peak to remove noise peaks as to improve the quality of the communication system.

As per claim 22, Challa et al does include wherein the designated code space includes phases for all or a portion of a pseudo-random noise (PN) sequence (see fig.5 elements 180-186) used to generate a pilot.

As per claim 23, Challa et al does include, wherein the searching is performed by a searcher and the processing for each candidate peak in a particular set is performed by a

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respective finger processor, and wherein the processing for all candidate peaks in the set are performed in parallel (see fig.5 element 130 and col.5, lines 15-67 and col.6, lines 2-67).

As per claim 24 Challa et al inherently includes wherein the frequency bins overlap.

As per claim 25, Challa teaches a method of acquiring one or more pilots in a CDMA communication system, comprising: partitioning a range of possible frequency errors for the pilots into a plurality of frequency bins (see col.6, lines 65-67 and col.7, lines 1-13); evaluating each of the frequency bins to acquire the one or more pilots (see col.7, lines 1-13); phase rotator is the same as the claimed (frequency translating data samples) (see fig. 5 element 162 and col.6, lines 43-67) derived from a received signal to an approximate center of the frequency bin, searching for peaks in the received signal, based on the frequency-translated data samples, over a designated code space to provide a set of one or more candidate peaks, processing each candidate peak to acquire the candidate peak (see fig.5 peak detectors); and pipelining the searching and processing for different frequency bins such that the searching for a next frequency bin is performed in parallel with the processing for a current frequency bin (see fig.5 element 130).

Challa does not teach terminating the evaluating upon detection of pilot acquisition.

Yamamoto teaches terminating the evaluation upon detection of pilot acquisition (see col.7, lines 15-20).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Yamamoto into Challa so that a result of the partial correlation is deemed to be a pilot candidate for signal detection in order to improve the quality of the communication as taught by Yamamoto (see col.7, lines 33-38).

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

10. Claims 26, 30-32 and 36-37 and 40-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Ogawa Pub No 2002/0024992 A1.

As per claims 26 and 32, Ogawa teaches a demodulator in a wireless communication system, comprising: a searcher operative to search for peaks in a received signal over a designated code space to provide a plurality of sets of one or more candidate peaks ((see fig.2 and col.2, paragraph [0022] and col.3, paragraph [0038]); and one or more finger processors operative to process at least one of the plurality of sets of one or more candidate peaks to acquire the candidate peaks, wherein the one or more finger processors are operated in parallel with the searcher such that the finger processors process a current set of candidate peaks while the searcher searches for a next set of candidate peaks (see fig.2 elements 11-1, 11-2 and col.3, paragraphs, [0040], [0043], [0046]).

As per claims 30 and 36 the demodulator of Ogawa does include wherein each finger processor includes a frequency control loop operative to acquire the frequency of a candidate peak assigned to the finger processor (see fig.2 element 12).

As per claims 31 and 37, the demodulator of Ogawa inherently includes, wherein the designated code space includes phases for all or a portion of a pseudo-random noise (PN) sequence used to generate a pilot.

As per claims 40-41, Ogawa does include a plurality of set of parameters (see figs. 2).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 28-29 and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa Pub No 2002/0024992 A1 in view of Van Stralen U.S. patent No 6,621,855 B1.

As per claims 28 and 34 Ogawa teaches all the features of the claimed invention except the demodulator of claim 26, wherein the searcher is operative to search for the next set of candidate peaks in a next bin of frequency errors while the one or more finger processors are operative to process the current set of candidate peaks found for a current bin of frequency offset.

Van Stralen teaches wherein the searcher is operative to search for the next set of candidate peaks in a next bin of frequency errors while the one or more finger processors are operative to process the current set of candidate peaks found for a current bin of frequency offset. (see col.1 , lines 39-45 and col.5, lines 25-67 and col.6, lines 1-5).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Van into Ogawa as to calculate the maximum response from the corresponding on of the frequency bin having the greatest absolute values as taught by Van (see col.5, lines 60-67 and col.6, lines 1-5).

As per claims 29 and 35, Ogawa Inherently includes the demodulator of claim 28, wherein the searcher and one or more finger processors each includes demodulator operative to down convert is functionally equivalent to the claimed (a rotator operative to frequency translate) data samples derived from the received signal. Furthermore implementing such teaching to an approximate center of the bin being operated on by the searcher or finger processor into Tran would have been obvious to one skill in the art as to calculate the maximum response from the corresponding on of the frequency bin having the greatest absolute values as taught by Van (see col.5, lines 60-67 and col.6, lines 1-5).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Abrishamkar et al U.S. patent No 6,507,743 B1 teaches a wireless communication receiver.

Marckok et al U.S. Patent NO 6,690,680 B1 teaches a communicatio system signal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is (703) 308-9573. The examiner can normally be reached on Monday-Thursday from 8:00 AM - 5:30 PM. The examiner can also be reached on alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour , can be reached on (703) 306-3034. The fax phone number for this Group is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3800.

Emmanuel Bayard

Primary Examiner

5/29/04



EMMANUEL BAYARD
PRIMARY EXAMINER